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Amendments to the Drawing Figures:

The attached drawing sheet(s) include proposed additional drawings 4A, 4B.

Attachment: New Sheet 4/4.

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REMARKS / DISCUSSION OF ISSUES

Claims 1-5, 7, and 10-23 are pending in the application.

The applicants thank the Examiner for acknowledging the claim for priority and receipt of certified copies of all the priority document(s).

Claims are amended for non-statutory reasons: to correct one or more informalities, and/or to replace European-style claim phraseology with American-style claim language. The claims are not narrowed in scope and no new matter is added.

The Office action objects to the drawings; new drawings 4A-B are submitted herein, and the specification is amended to refer to these drawings. No new matter is added. The Office action required drawings that illustrate the claimed timing relationships. The inverse of switching rate is transition time; the drawings illustrate that the transition time of the pixels decreases based on the sequence of selecting each row, which is equivalent to the applicants' teaching that a switching rate of pixels increases based on the sequence of selecting each row.

The Office action rejects claims 1-5, 7, and 10-23 under 35 U.S.C. 112, first paragraph. The applicants respectfully traverse this rejection.

With regard to claims 1-5 and 7, the Office action asserts that the specification does not disclose increasing a switching rate of pixels based on the sequence of selecting the pixels, so as to minimize a variance between the time of applying the pulse of light to the display and the times that the pixels complete their switching. The applicants respectfully disagree with this assertion.

The applicants teach that conventional pulsed backlight display devices address the pixels sequentially, row by row, and apply a pulse of light after the last row is addressed. This causes a problem because the pixels on the first addressed lines have a longer time to transition to their final state than pixels on the later lines. The applicants then teach that a cure to this problem is to increase the switching rate for the later-addressed pixels. (Applicants page 1, lines 10-25.)

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Because the switching rate is the inverse of transition time, the teaching of increasing the switching rate is equivalent to teaching decreasing the transition time. When the transition time for later-addressed pixels is reduced, the difference in time to transition to the final state between the first rows and last rows decreases, and thus the variance between the time of applying the pulse of light and the times that the pixels complete their switching decreases.

The remainder of the specification teaches techniques for increasing the switching rate based on the sequence of selecting the pixels, which is equivalent to teaching techniques for decreasing the variance between the time of applying the pulse of light and the times that the pixels complete their switching.

With regard to claims 10-23, the Office action asserts that the specification fails to teach a display device that is configured such that a switching rate of each row of pixels is configured to be based on a difference between the time of applying the light pulse and the row selection time of the row of pixels.

As noted above, at page 1, lines 10-25, the applicants teach that a problem with conventional displays is that earlier selected rows have a longer time to reach their final state before the light pulse is applied. To cure this problem, the applicants teach that the rows that are addressed later, i.e. with less time until the light pulse is applied, have a higher switching rate.

Because the applicants clearly teach a pulse backlight display device that applies a pulse of light after completing a row-selection sequence, and increases the switching rate of pixels based on the sequence of row selection, the applicants respectfully maintain that the applicants' specification clearly discloses each of the claim limitations.

The Office action rejects claim 1 under 35 U.S.C. 112, second paragraph; claim 1 is correspondingly amended herein.

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The Office action objects to claims 16-18 and 20-21 as being substantial duplicates of claims 12-15 and 19. The applicants respectfully traverse this objection. Claims 12-15 and 19 are dependent upon claim 11. Claims 16-18 and 20-21, on the other hand, are dependent upon claim 10, and do not contain the added limitation of claim 11: " the row driver is configured to apply sequentially larger voltage differentials to form each row drive signal from the first time to the second time within the frame period". The applicants respectfully maintain that this limitation is not insubstantial, and therefore the scope of claims 16-18 and 20-21 is substantially different from the scope of claims 12-15 and 19.

The Office action rejects claims 1-5, 10-12, 16, and 23 under 35 U.S.C. 103(a) over Zhang et al. (USP 5,461,397, hereinafter Zhang), Bae et al. (USP 5,247,194, hereinafter Bae), and Kumagawa et al. (USP 6,232,944, hereinafter Kumagawa). The applicants respectfully traverse this rejection.

Claim 1, upon which claims 2-5 and 7 depend, claims a display device that includes a first driver that is configured to drive the selection electrodes in a sequence and a pulsed backlight system that applies a pulse of light at a select time after the sequence of selecting the pixels, and is configured to increase a switching rate of pixels based on the sequence.

The Examiner's attention is requested to MPEP 2131, wherein it is stated:

> "A claim is anticipated only if *each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The *identical invention* must be shown in as *complete detail* as is contained in the ... claim." *Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Neither Zhang, nor Bae, nor Kumagawa teaches or suggests increasing a switching rate of pixels based on the sequence of selecting pixels.

The Office action acknowledges that Zhang and Bae fail to provide this teaching (Office action, page 7, lines 18-20), and asserts that Kumagawa provides this teaching. The applicants respectfully disagree with this assertion.

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Kumagawa teaches a driving scheme for an STN type LCD that does not include switching devices at each pixel (Kumagawa, column 1, lines 23-30). Kumagawa does not teach increasing the switching rate of the pixels. Kumagawa teaches increasing the signal/data voltage applied to pixels at columns that are distant from the row drivers, to overcome the resistance-capacitance losses caused by the distance. This additional voltage assures the uniformity of brightness across the display screen, by assuring that the pixels are fully turned-on, and/or fully turned-off. (Kumagawa, column 1, lines 43-51, and each of the embodiments described in Kumagawa's Summary of the Invention at column 3, line 62 through column 10, line 48.)

Further, Kumagawa's increased voltage is based on the column of the pixel, and not based on the pixel selection sequence, as claimed by the applicants. In Kumagawa, as in the applicants' invention, the row driver provides the sequence that selects each row, and the column drivers provide the voltage corresponding to the data of the pixels in each selected row. In Kumagawa, all of the pixels in a given column receive the same boosted voltage, independent of the row of each pixel.

Because neither Zhang, nor Bae, nor Kumagawa teaches or suggests increasing a switching rate of pixels based on the sequence of selecting pixels, as specifically claimed in claim 1, the applicants respectfully maintain that the rejection of claims 1-5 under 35 U.S.C. 103(a) over Zhang, Bae, and Kumagawa is unfounded, per MPEP 2142.

Claim 10, upon which claims 11-23 depend, claims a display device that includes an array of pixels that includes rows of pixels that are selected by a plurality of row drive signals, each row of pixels thereby having a sequentially increasing row selection time, and is configured such that a switching rate of each row of pixels is configured to be based on a difference between the time of applying a pulse of light and the row selection time of the row of pixels.

Neither Zhang, nor Bae, nor Kumagawa teaches or suggests a switching rate of each row of pixels that is based on a difference between the time of applying a pulse of light and the row selection time of the row of pixels.

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The Office action acknowledges that neither Zhang nor Bae teaches a switching rate of each row of pixels that is based on a difference between the time of applying a pulse of light and the row selection time of the row of pixels (Office action, page 10, lines 6-10), and asserts that Kumagawa provides this teaching. The applicants respectfully disagree with this assertion.

As noted above, Kumagawa does not teach a switching rate of each row of pixels that is based on the row selection time. Kumagawa's boosted voltage compensates for the rms voltage losses caused by resistance-capacitance effects that are based on the distance of the pixel from the row drive. Kumagawa is silent with regard to the switching rate of the pixels, and Kumagawa's boosted voltage is determined by the column of the pixel, and is independent of the time that each row is selected.

Because neither Zhang, nor Bae, nor Kumagawa teaches or suggests a switching rate of each row of pixels that is based on a difference between the time of applying a pulse of light and the row selection time of the row of pixels, as specifically claimed in claim 10, the applicants respectfully maintain that the rejection of claims 10-23 under 35 U.S.C. 103(a) over Zhang, Bae, and Kumagawa is unfounded, per MPEP 2142.

The Office action rejects claim 7 under 35 U.S.C. 103(a) over Zhang, Bae, and Bonnett et al. (USP 6,075,506). The applicants respectfully traverse this rejection.

Claim 7 is dependent upon claim 1. In this rejection, the Office action relies upon Zhang and Bae for teaching all of the elements of claim 1, except for providing a temperature gradient to increase the switching rate in a direction of the sequence of selecting the pixels (Office action, page 14, lines 14-16). The Office action asserts that Bonnett provides this teaching. The applicants respectfully disagree with this assertion.

Bonnett teaches the effects of temperature on pixel switching speed, but is silent with regard to varying the temperature based on the sequence of selecting pixels. The Office action does not assert that Bonnett teaches varying the temperature based on the sequence of selecting pixels, and, as noted above, the

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Office action specifically acknowledges that Zhang and Bae fail to teach increasing a switching rate of pixels based on the sequence of selecting pixels (Office action, page 7, lines 18-20). Therefore, because each of the cited references does not teach or suggest increasing a switching rate of pixels based on the sequence of selecting pixels, the combination of Zhang, Bae, and Bonnett cannot be said to teach or suggest increasing a switching rate of pixels based on the sequence of selecting pixels.

Because neither Zhang, nor Bae, nor Bonnett teaches or suggests increasing a switching rate of pixels based on the sequence of selecting pixels, as specifically claimed in claim 1, the applicants respectfully maintain that the rejection of claim 7 under 35 U.S.C. 103(a) over Zhang, Bae, and Bonnett is unfounded, per MPEP 2142.

The Office action rejects:

claims 14-15 and 18-22 under 35 U.S.C. 103(a) over Zhang, Bae, Kumagawa, and Bonnett; and

claims 13 and 17 under 35 U.S.C. 103(a) over Zhang, Bae, Kumagawa, and Kanemori et al. (USP 5,508,591).

The applicants respectfully traverse these rejections.

Each of these rejected claims depend upon claim 10. In each of these rejections, the Office action relies upon Zhang, Bae, and Kumagawa for teaching the elements of claim 10. As noted above, Zhang, Bae, and Kumagawa fail to teach each of the elements of claim 10.
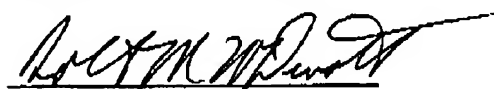
Because neither Zhang, nor Bae, nor Kumagawa teaches or suggests a switching rate of each row of pixels that is based on a difference between the time of applying a pulse of light and the row selection time of the row of pixels, as specifically claimed in claim 10, the applicants respectfully maintain that the rejections of claims 13-15 and 17-22 under 35 U.S.C. 103(a) that rely upon Zhang, Bae, and Kumagawa for teaching the elements of claim 10 are unfounded, per MPEP 2142.

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      In view of the foregoing, the applicants respectfully request that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

      Respectfully submitted,

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PAGE 16/17 * RCVD AT 3/1/2006 1:11:46 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-5/20 * DNIS:2738300 * CSID:2152437525 * DURATION (mm-ss):04-12